



**PAWS  
Science  
Grade 8**

**Released Items  
With Data**

**2009**

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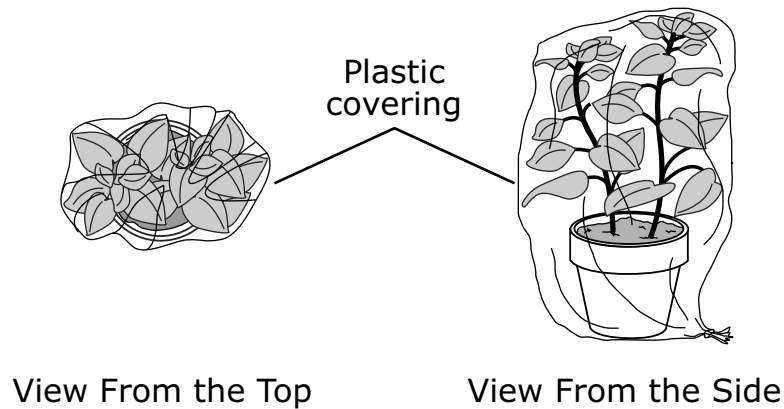
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## Transpiration

"Transpiration" is the process by which a plant loses water to the surrounding atmosphere. Mariah's class is doing an experiment focused on transpiration in plants. The picture below shows how the students in Mariah's class wrapped a large, clear plastic bag around each potted plant.

### Experiment Focused on Transpiration in Plants



They prepared three green-leafed potted plants, each a different species. On a warm, sunny day in May, they placed all three plastic-wrapped plants outside for four hours.



3515105

**Which of the following were the students most likely investigating with this experiment?**

- A** They wanted to see how transpiration rates affect insect pollination.
- B** They hoped to find the different conditions needed for transpiration.
- C** They hoped to learn the scientific meaning of the term transpiration.
- D** They wanted to compare the transpiration rates of different plant species.

Grade 8

Science

CID 3515105

Item # 13

Administration FT07

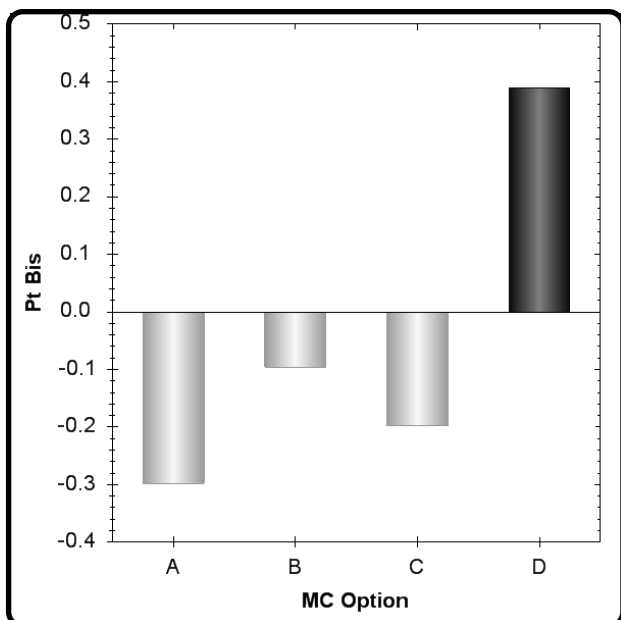
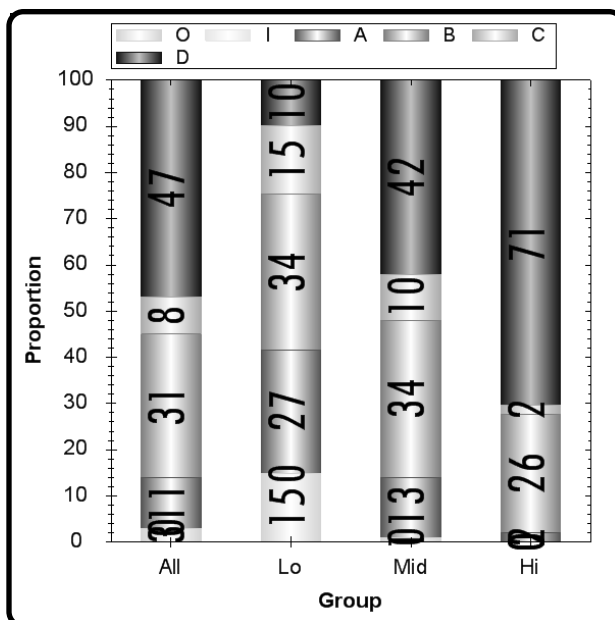
S.08.1.a

Psg : Transpiration

Type	Max Points	Correct Answer	N Count	Item Mean	Discrimination
Multiple Choice	1	D	974	0.483	0.389

	A	B	C	D	Omit	Invalid
All	11	31	8	47	3	0
Low Scorers	27	34	15	10	15	0
Middle Scorers	13	34	10	42	1	0
High Scorers	2	26	2	71	0	0

MC Item Option Discriminations			
A	B	C	D
-0.298	-0.096	-0.197	0.389



Notes:

3515106

**At the end of the four-hour period, the students took measurements for each of the three bags. Which quantity was measured with a graduated cylinder?**

- A** The volume of water in each bag
- B** The amount of pollen in each bag
- C** The volume of oxygen in each bag
- D** The amount of carbon dioxide in each bag



Grade 8

Science

CID 3515106

Item # 15

Administration FT07

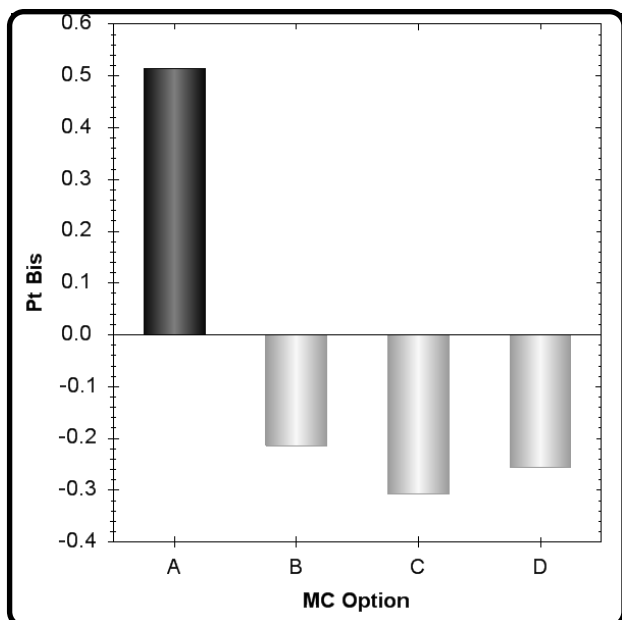
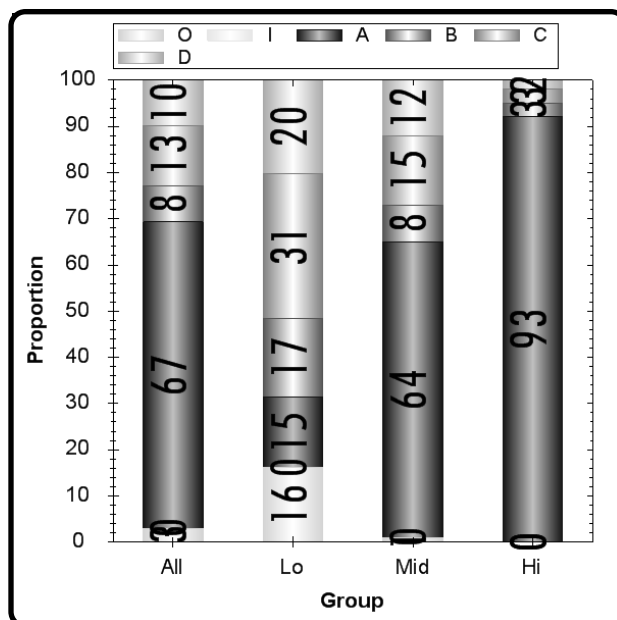
S.08.3.a

Psg : Transpiration

Type	Max Points	Correct Answer	N Count	Item Mean	Discrimination
Multiple Choice	1	A	973	0.689	0.515

	A	B	C	D	Omit	Invalid
All	67	8	13	10	3	0
Low Scorers	15	17	31	20	16	0
Middle Scorers	64	8	15	12	1	0
High Scorers	93	3	3	2	0	0

MC Item Option Discriminations			
A	B	C	D
0.515	-0.214	-0.308	-0.255



Notes:

3515109

**The students observed each bag at the end of the four-hour period. Which of the following statements best describes how each bag looked?**

- A** Each bag was moist inside.
- B** Each bag was moist outside.
- C** Each bag was tight from high pressure inside.
- D** Each bag was yellow from the flower pollen inside.

Grade 8

Science

CID 3515109

Item # 13

Administration FT07

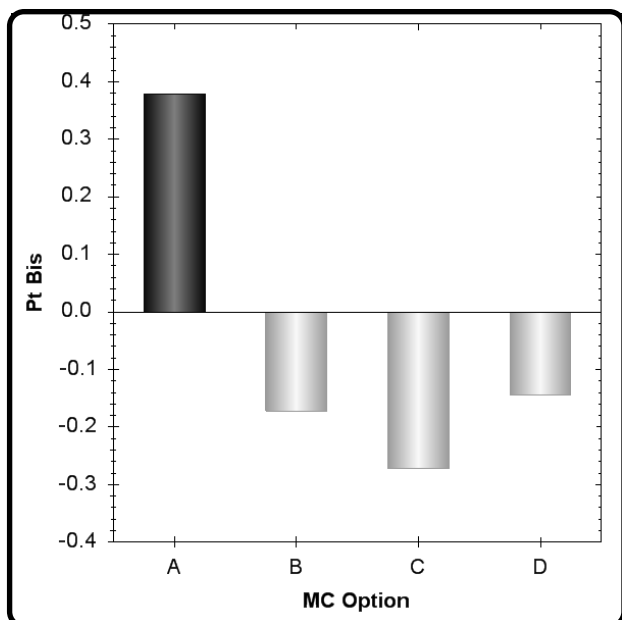
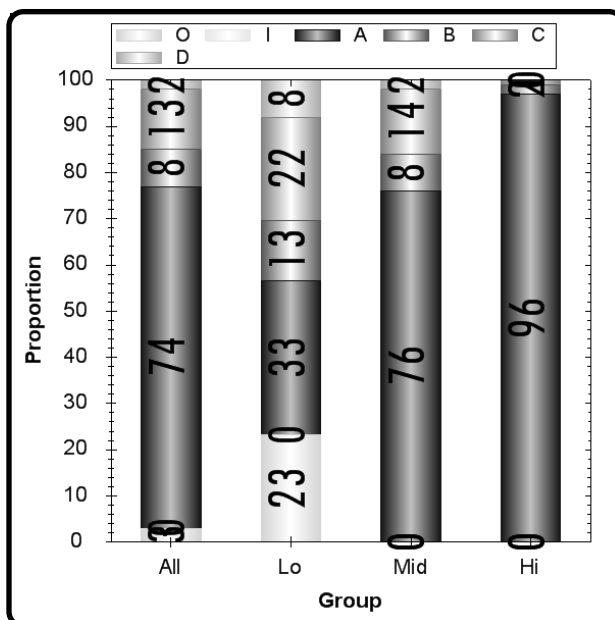
S.08.1.a

Psg : Transpiration

Type	Max Points	Correct Answer	N Count	Item Mean	Discrimination
Multiple Choice	1	A	980	0.761	0.379

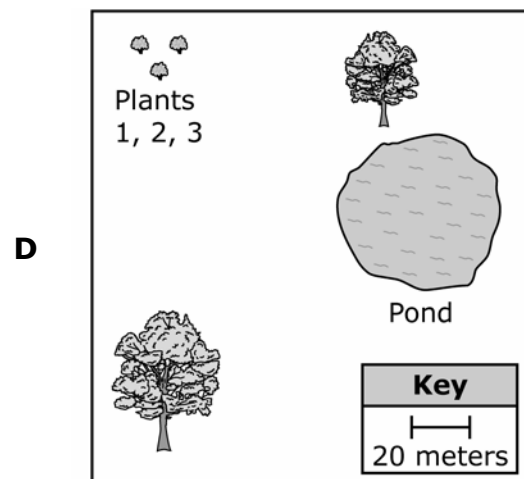
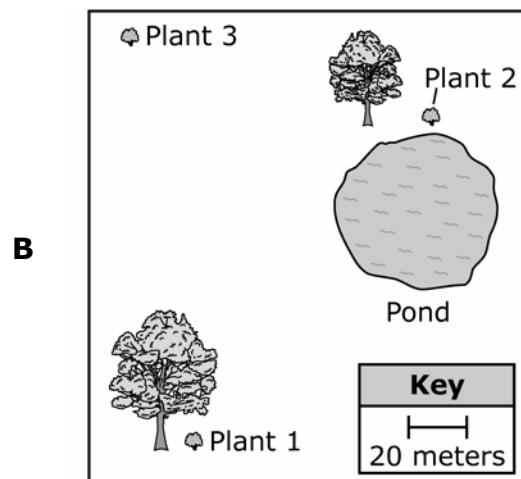
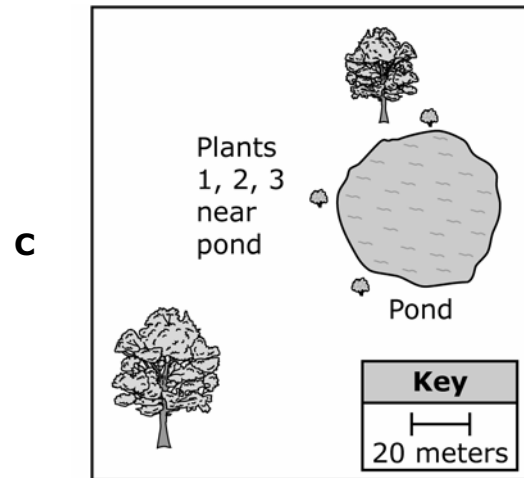
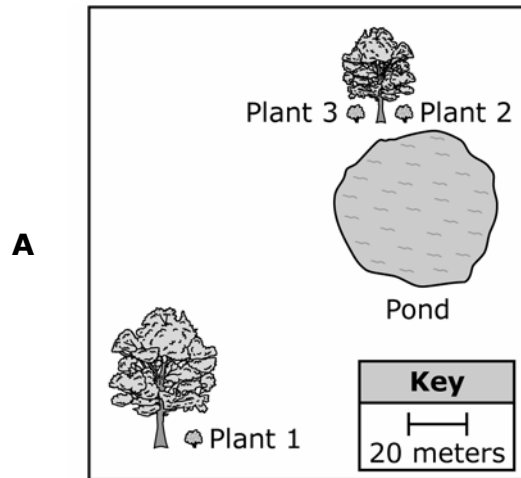
	A	B	C	D	Omit	Invalid
All	74	8	13	2	3	0
Low Scorers	33	13	22	8	23	0
Middle Scorers	76	8	14	2	0	0
High Scorers	96	2	1	0	0	0

MC Item Option Discriminations			
A	B	C	D
0.379	-0.172	-0.272	-0.144



Notes:

Factors such as wind speed and direction, temperature, and light affect transpiration. Which of the following shows the best way for students to place the plants to collect unbiased data?



Grade 8

Science

CID 3515110

Item # 14

Administration FT07

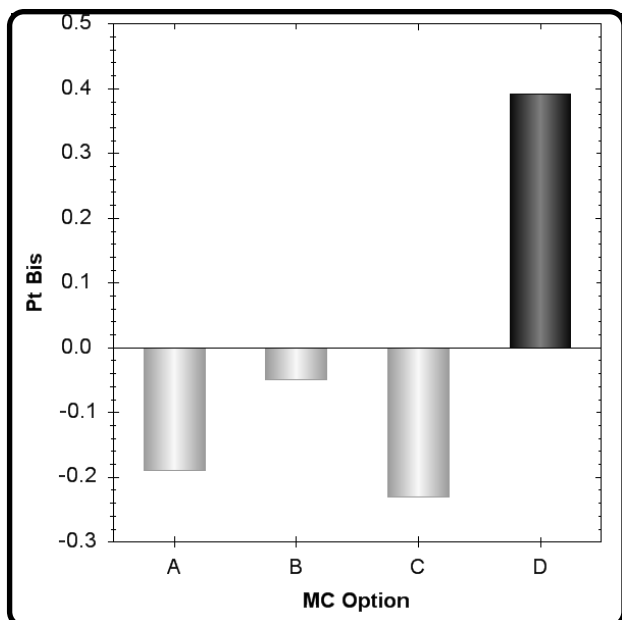
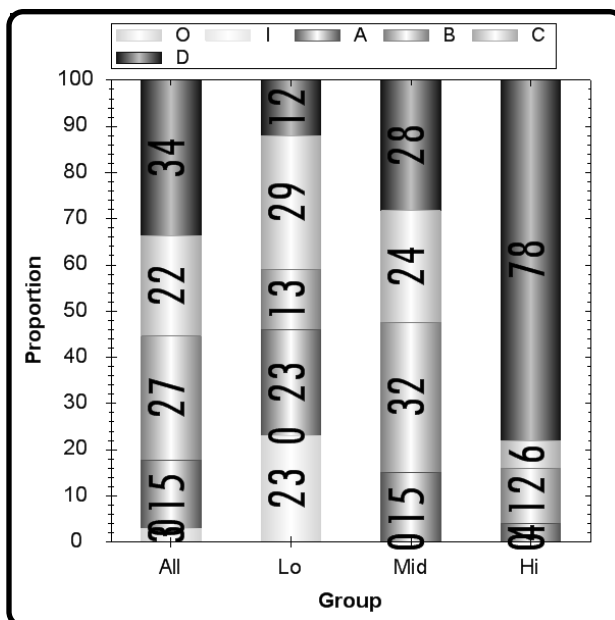
S.08.2.a

Psg : Transpiration

Type	Max Points	Correct Answer	N Count	Item Mean	Discrimination
Multiple Choice	1	D	981	0.349	0.392

	A	B	C	D	Omit	Invalid
All	15	27	22	34	3	0
Low Scorers	23	13	29	12	23	0
Middle Scorers	15	32	24	28	0	0
High Scorers	4	12	6	78	0	0

MC Item Option Discriminations			
A	B	C	D
-0.190	-0.049	-0.231	0.392



Notes:

The students in Mariah's class decided to investigate the effects of a range of temperatures (from 15°C to 25°C) and wind speed on transpiration. They could use a room with heating and air conditioning and an electric fan with three speed settings (low, medium, and high). They set up two different experiments, altering one variable at a time.

**Part A.** In the space provided, describe one way the students in Mariah's class could design their experiments. Explain your answer.

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**Part B.** In the space provided, explain why it is important for the students to alter the wind-speed variable separately from the temperature variable.

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Grade 8

Science

CID 3515113

Item # 26

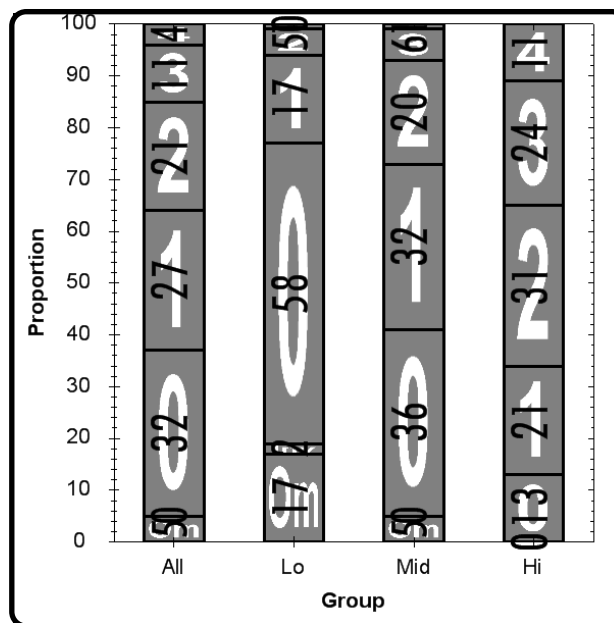
Administration FT07

S.08.2.a

Psg : Transpiration

Type  
Open EndedMax Points  
4N Count  
944Item Mean  
1.248Discrimination  
0.548

	0	1	2	3	4	Omit	Invalid
All	32	27	21	11	4	5	0
Low Scorers	58	17	5	1	0	17	2
Middle Scorers	36	32	20	6	1	5	0
High Scorers	13	21	31	24	11	0	0



Notes:

